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A F T E R N O O N      S E S S I O N

1:47 p.m.

01:47:20 THE VIDEO OPERATOR: We're back on  
01:47:24 the record. The time on the screen is 1:47:24.

6 K E N N E T H    S.    H O U G H T O N,  
7 resumed, having been previously duly sworn, was  
8 examined and testified further as follows:

9 CONTINUED EXAMINATION

01:47:26 10 BY MR. PAYTON:

01:47:34 11 Q. Dr. Houghton, before we broke, you  
01:47:48 12 were describing the use of DAP in the RL process  
47:52 13 as part of a general discussion of use of ammonia  
01:48:00 14 in the RL and RCB process. I want to go back to  
01:48:02 15 something you said about the use of ammonia in  
01:48:06 16 the RCB process.

01:48:06 17 I believe you said, and just correct  
01:48:10 18 me if I have this at all wrong, that you were  
01:48:14 19 unsure whether after the ammonia is driven off in  
01:48:18 20 the RCB process there was more ammonia left than  
01:48:22 21 was in the tobacco to begin with?

01:48:26 22 A. I think what I said at the time is  
01:48:32 23 there's some ammonia left in the finished sheet  
01:48:36 24 that we manufacture, but I didn't -- I don't  
48:42 25 recall how much of that results from the use of

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01:48:46 2 raw materials that contain ammonia naturally like  
01:48:52 3 Burley stems, say, or how much might be some of  
01:48:54 4 the ammonia that's not driven off. I just don't  
01:48:58 5 know what that ratio or levels are.

01:49:02 6 Q. Let me go to the RL process and ask a  
01:49:08 7 few questions, and we may come back to this.

01:49:16 8 The use of -- strike that. New  
01:49:22 9 question. Stems are the primary raw material  
01:49:24 10 used in the RL process, aren't they?

01:49:28 11 A. Yeah. Just so I make this thing  
01:49:30 12 clear, I'm talking up until the time I -- I  
49:34 13 was -- the end of that period of '83, I was  
01:49:40 14 general manager. What I recall about the RL  
01:49:46 15 plant at that time is the major raw material was  
01:49:50 16 a combination of Bright and Burley stems. The  
01:49:54 17 relative percentages of each changed over time.

01:50:00 18 Q. And was the approximate percentage  
01:50:10 19 contribution of stems in the RL process pretty  
01:50:12 20 much the same as the contribution of stems in the  
01:50:16 21 RCB process?

01:50:16 22 MR. MURPHY: I object to the form of  
01:50:18 23 the question.

01:50:18 24 Q. Did you understand that question?

50:20 25 A. Are you asking me on the raw

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01:50:22 2 materials coming in what percent by weight was  
01:50:26 3 stem as I recall it?

01:50:28 4 Q. Was it roughly the same for the RL  
01:50:30 5 and the RCB process?

01:50:32 6 A. I think I can answer that question.  
01:50:42 7 What I recall is that there was less stem as --  
01:50:46 8 as a percentage in the raw material of the BL  
01:50:52 9 plant than the RL plant. The BL plant was able  
01:50:58 10 to use more non-stem material than the RL plant  
01:51:00 11 as part of the feedstock.

01:51:16 12 Q. Do you know what the relative ammonia  
51:20 13 contents are of the raw materials that went into  
01:51:24 14 the RCB process versus the RL process?

01:51:26 15 MR. MURPHY: Object to the form of  
01:51:30 16 the question. Do you understand the question?

01:51:34 17 A. I think -- am I correct you're asking  
01:51:38 18 me for every type of raw material used in the two  
01:51:42 19 processes, what was the ammonia content in the  
01:51:46 20 raw material when it -- when it arrived at the  
01:51:46 21 plant?

01:51:46 22 Q. Yes.

01:51:48 23 A. I'm sorry, I -- I don't recall those  
01:51:50 24 figures any more.

51:52 25 Q. Let me ask --

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01:51:54 2 A. And they probably varied depending  
01:51:56 3 upon what year and what the materials were. I  
01:51:58 4 just don't recall.

01:52:02 5 Q. Your understanding is that there was  
01:52:10 6 less ammonia in this time period in the RL  
01:52:12 7 finished product than there was in the RCB  
01:52:14 8 finished product; is that correct?

01:52:14 9 MR. MURPHY: I object to the form of  
01:52:16 10 the question. You can answer.

01:52:18 11 A. I don't recall saying anything about  
01:52:22 12 that. What I recall saying is that there was  
52:26 13 less stem in the BL as a percentage of the  
01:52:28 14 feedstock of the BL product at the time I was  
01:52:32 15 involved there, than there was in the RL. If  
01:52:34 16 you're asking me do I recall the exact  
01:52:40 17 percentages of ammonia in both finished products,  
01:52:46 18 I -- I don't recall what they were today.

01:53:36 19 Q. All right. Dr. Houghton, I may have  
01:53:40 20 simply confused myself and I'm simply, really,  
01:53:44 21 I'm a little confused. I was asking about why  
01:53:50 22 ammonia was added to RL since there was no need,  
01:53:54 23 as I understand it, for any adhesive. There is  
01:53:58 24 no need for any adhesive in the RL process; is  
53:58 25 that correct?

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01:54:00 2 MR. MURPHY: I object to the form of  
01:54:02 3 the question. I don't know what you're asking,  
01:54:02 4 John.

01:54:10 5 A. The purpose of putting originally the  
01:54:16 6 ammonia in the RCB and the DAP in the RCB, as I  
01:54:18 7 told you, was to free up the pectin.

01:54:18 8 Q. Right.

01:54:22 9 A. Okay. My understanding at the time  
01:54:26 10 when we went to Schweitzer for them to produce  
01:54:32 11 for us the first recon, which I told you was  
01:54:36 12 called Schweitzer RCB, what I -- what I believe  
54:40 13 was the case at the time is -- is that there was  
01:54:48 14 DAP in that flavor system which allowed,  
01:54:52 15 therefore, some ammonia to be present in the  
01:54:56 16 finished product so that both -- that product  
01:54:58 17 would smoke like RCB.

01:55:00 18 Q. Okay.

01:55:04 19 A. It was RCB-like in character.

01:55:22 20 Q. The RL process, does it have a step  
01:55:24 21 where the ammonia is driven off?

01:55:30 22 A. I don't recall if there's ammonia  
01:55:34 23 lost from the finished product during the drying  
01:55:40 24 processes. It's quite possible that there's some  
55:40 25 ammonia lost there.

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01:55:44 2 Q. And there would also be some ammonia  
01:55:48 3 lost in the drying process in the RCB, wouldn't  
01:55:48 4 there?

01:55:50 5 A. Yes, that's what I -- I said.

01:55:52 6 Q. Okay. But there is no step in the RL  
01:55:56 7 process where the ammonia is driven off as it's  
01:55:58 8 driven off in the RCB process?

01:56:00 9 MR. MURPHY: I object to the form of  
01:56:02 10 the question, and the question's been asked and  
01:56:06 11 answered. Let's move on. The witness just  
01:56:08 12 answered that precise question, John.

56:08 13 Q. What's the answer?

01:56:10 14 MR. MURPHY: You can answer again. I  
01:56:12 15 think this is unnecessary. You can answer  
01:56:12 16 again.

01:56:16 17 A. In the RCB process, as you're drying  
01:56:20 18 on a steel belt, okay, the sheet's on a steel  
01:56:24 19 belt, you're drying using I believe natural gas  
01:56:30 20 to heat the whole drying <sup>ch</sup> up, you drive off water ~~A~~  
01:56:34 21 and some ammonia with it, okay. It's lost as  
01:56:42 22 you're drying it down, and your drying starts at  
01:56:44 23 like 20 percent solid and you want it to be 88,  
01:56:48 24 85, 88 percent, so you're driving a lot of water  
56:50 25 off. And in doing that drying you drive off

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ammonia and then you form the calcium pectate again.

In the RL process I can't recall what the moisture content is going into the dryer. Back then it may have been somewhere around 50 percent water and it comes out at 80, 85 percent out of that dryer. During that period of time, with that amount of heat there's a possibility you had losses of ammonia, I just don't recall how much or really if there was. But it would seem under the same thermal kind of situation there's the possibility to lose ammonia. I don't recall if we ever measured to see what the -- if there were losses or how much. Now I'm still back in 1983. They are running faster speeds I think now.

Q. Do you know if diammonium phosphate, DAP, plays a role in nicotine delivery?

MR. MURPHY: Object to the form of the question. You can answer the question.

A. Are you -- are you referring to RCB RL kind of thing? Are you -- what's the conditions that we're talking about here?

Q. With respect to RL do you know if DAP

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01:58:58 2 plays a role in nicotine delivery?

01:59:00 3 MR. MURPHY: What do you mean by

01:59:02 4 nicotine delivery, John?

01:59:04 5 Q. I mean what you described as nicotine  
01:59:04 6 delivery.

01:59:06 7 MR. MURPHY: In his prior testimony?

01:59:08 8 MR. PAYTON: Yes.

01:59:10 9 Q. I'll tell you what it means.  
01:59:12 10 Nicotine delivery is nicotine from the RL ending  
01:59:14 11 up in the smoke.

01:59:18 12 MR. MURPHY: That's not his prior  
59:20 13 testimony as to the meaning of nicotine  
01:59:20 14 delivery.

01:59:22 15 MR. PAYTON: Come on. It was from  
01:59:24 16 the filler to the smoke.

01:59:26 17 MR. MURPHY: John, don't interrupt me  
01:59:28 18 when I'm stating an objection. That is not his  
01:59:30 19 testimony as to nicotine delivery. He has  
01:59:32 20 previously testified that nicotine delivery to  
01:59:36 21 him is a term which means nicotine delivery in  
01:59:38 22 smoke as measured under an FTC test. That was  
01:59:42 23 his <sup>previous</sup> testimony on two prior occasions. I'm not ~~sure~~  
01:59:44 24 sure what question you're asking him because the  
59:44 25 way you just defined the term and the way you

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just summarized the testimony is not the way he  
had previously defined it in his testimony.

What is your question? Just put a  
question to the witness.

Q. Do you understand the term nicotine  
delivery?

A. Yeah, I described to you before what  
I mean when I say that. It's the amount of  
nicotine measured in the mainstream smoke from a  
cigarette using the testing.

Q. Okay. Do you know if the use of DAP  
in the RL process has an effect on nicotine  
delivery?

A. I don't know and -- I don't know if I  
ever measured whether -- I don't recall any -- I  
don't think so, but I don't know.

Q. Okay. Have you ever seen any studies  
by Philip Morris on the subject of nicotine  
delivery and ammonia?

MR. MURPHY: I object to the form of  
the question. Are you still referring to  
nicotine delivery and DAP in the RL process or is  
this a different inquiry altogether?

MR. PAYTON: It's a different

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02:01:00 2 inquiry.

02:01:06 3 A. You asked me if I recall any studies  
02:01:10 4 on ammonia level or ammonia or DAP ~~in~~ nicotine. \*

02:01:12 5 Q. Delivery.

02:01:12 6 A. Delivery.

02:01:12 7 Q. That's correct.

02:01:16 8 A. Measured in cigarettes. I don't  
02:01:16 9 recall any.

02:01:24 10 Q. Do you know if the use of DAP or  
02:01:30 11 ammonia in the RCB process has a relationship to  
02:01:36 12 nicotine delivery?

01:36 13 MR. MURPHY: Object to the form of  
02:01:38 14 the question. You can answer.

02:01:40 15 A. I -- it's the same question I just  
02:01:46 16 answered for RL. I don't know, I don't know of  
02:01:48 17 any work that indicates that.

02:01:54 18 Q. Do you know if DAP or any other form  
02:01:58 19 of ammonia is used at any other place in the  
02:02:00 20 cigarette making process that Philip Morris uses?

02:02:14 21 A. Are you asking as of, what is it,  
02:02:16 22 1994?

02:02:16 23 Q. Yes.

02:02:28 24 A. The date. I don't recall any other  
02:34 25 place where diammonium phosphate or ammonia is

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02:02:38 2 used. I don't recall any.

02:03:26 3 Q. Dr. Houghton, do you know if  
02:03:30 4 diammonium phosphate is an acid or a base?

02:03:44 5 A. I -- I'm not sure on when you lose  
02:03:48 6 one ammonia or two ammonias whether that's --  
02:03:52 7 what the pH is that drives that. I'm just not  
02:03:52 8 sure.

02:04:10 9 Q. Are you aware of any studies by  
02:04:16 10 Philip Morris prior to March 24, 1994 relating to  
02:04:22 11 the manipulation of nicotine delivery by the  
02:04:26 12 addition of other chemicals?

04:28 13 MR. MURPHY: I object to the form of  
02:04:30 14 the question. By the addition of other  
02:04:32 15 chemicals, John, this is --

02:04:36 16 Q. Acids, by the addition of acids.

02:04:38 17 MR. MURPHY: Manipulation of nicotine  
02:04:40 18 delivery by the addition of acids, is that the  
02:04:40 19 question?

02:04:42 20 MR. PAYTON: Yes.

02:04:42 21 MR. MURPHY: Do you understand the  
02:04:44 22 question, Dr. Houghton?

02:04:44 23 A. To what?

02:04:46 24 Q. To the filler.

04:46 25 A. To the filler.

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02:04:48 2 MR. MURPHY: I object to the form,  
02:04:50 3 but you can answer the question.

02:04:52 4 A. I'm aware that there has been work in  
02:05:02 5 the past where acids, organic acids have been  
02:05:04 6 added to tobacco. I can't tell you what the --  
02:05:10 7 what the impact was on -- on smoke delivery from  
02:05:12 8 those tests offhand.

02:05:14 9 Q. Or on nicotine delivery?

02:05:16 10 A. Yeah. I don't know what the  
02:05:20 11 chemistry of the -- or -- yeah, what the  
02:05:26 12 chemistry of the smoke was. Off the top of my  
05:30 13 head I would -- I wouldn't expect it to have a --  
02:05:32 14 an impact one way or the other because tobacco is  
02:05:38 15 a buffered environment. I would think you would  
02:05:46 16 have to have huge amounts of -- relatively huge  
02:05:48 17 amounts to make any impact on it. I don't recall  
02:05:56 18 seeing any. If you have some information I'll  
02:06:02 19 look at it.

02:06:18 20 MR. PAYTON: Would you mark this as  
02:06:18 21 Exhibit 13.

22 (Houghton Exhibit 13 for  
23 identification, report entitled "Manipulation of  
24 nicotine delivery by addition of acids to  
25 filler," dated June 18, 1975, written by Joseph


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2 Cipriano, production numbers PA 918727 through  
3 8738 or 2024545721 through 2024545732.)

02:06:20 4 Q. Dr. Houghton, you've been handed  
02:06:24 5 what's been marked Houghton Exhibit 13, a report  
02:06:30 6 from the Philip Morris Research Center dated June  
02:06:56 7 18, 1975, written by Joseph Cipriano. It has  
8 production numbers PA 918727 through 8738 or  
02:07:04 9 2024545721 through 5732. The report title is  
10 "Manipulation of nicotine delivery by addition  
02:07:04 11 of acids to filler."

02:07:16 12 Do you recall seeing this before,  
07:16 13 Dr. Houghton?

02:07:18 14 A. *10* I don't think I would have seen this   
02:07:22 15 report. It's from 1975.

02:07:26 16 Q. It's from 1975, I understand that.

02:07:28 17 A. I don't recall seeing it.

02:07:42 18 Q. Do you recall any research that would  
02:07:48 19 have occurred after you became vice president in  
02:07:52 20 1986, at Philip Morris R&D, on the subject of the  
02:07:56 21 manipulation of nicotine delivery?

02:07:58 22 MR.. MURPHY: Object to the form of  
02:08:00 23 the question. I don't think you mean would have  
02:08:02 24 occurred. Are you asking him whether he recalls  
08:04 25 any research that did occur?

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02:08:04 2 MR. PAYTON: That did occur.

02:08:10 3 A. Well, one, I don't recall the term  
02:08:14 4 manipulation, nicotine manipulation being a term  
02:08:20 5 that was used then. I've seen it in the papers  
02:08:30 6 in the last year or so, but -- I don't recall  
02:08:36 7 anything that was designed to manipulate  
02:08:38 8 nicotine.

02:08:42 9 Q. Do you understand what the term  
02:08:48 10 manipulation of nicotine delivery means?

02:08:50 11 A. I'm about to read that thing and see  
02:08:52 12 what they meant by it.

08:54 13 Q. It's not a term that you have  
02:08:56 14 otherwise heard since you've been vice  
02:08:58 15 president?

02:08:58 16 MR. MURPHY: Objection; asked and  
02:09:00 17 answered. He just testified to that precise  
02:09:02 18 point, John.

02:09:04 19 MR. PAYTON: He said he's seen it in  
02:09:04 20 the papers.

02:09:06 21 Q. You haven't heard that term used by  
02:09:08 22 Philip Morris personnel?

02:09:10 23 MR. MURPHY: And he also said he does  
02:09:12 24 not recall it being a term that was used then,  
09:18 25 meaning as of the time of this document. What is

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02:09:18 2 your precise question?

02:09:20 3 MR. PAYTON: No, I don't think he  
02:09:20 4 meant that.

02:09:22 5 A. No, since I've been at R&D I don't  
02:09:28 6 recall that being a term that we used in  
02:09:30 7 discussing nicotine.

02:09:38 8 MR. MURPHY: Okay.

02:09:40 9 A. Can I read it?

02:09:40 10 Q. Sure.

02:18:58 11 A. I've read it.

02:18:58 12 Q. Do you understand it?

19:06 13 A. I'm not sure I understood everything  
02:19:14 14 in here. What I do understand from here, I got a  
02:19:18 15 bunch of hypotheses -- let me find the right  
02:19:24 16 page. Okay. Apparently they were doing  
02:19:30 17 experiments by adding acids to tobacco filler,  
02:19:32 18 then measuring the delivery of the cigarettes.

02:19:34 19 Q. The nicotine delivery of the  
02:19:34 20 cigarettes?

02:19:40 21 A. They were measuring tar, nicotine,  
02:19:46 22 water, puff, or TPM. They measured nicotine in  
02:19:48 23 filter, they measured some pH in smoke, I'm not  
02:19:52 24 sure how they did that, but it's okay, and they  
19:58 25 measured nicotine in filter RTDs.

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Now, basically what I see in here as part of their experiments they found -- they got some numbers that indicated to them that there was an increase in nicotine delivery. What it claims in here is about a 20 percent, I think --

Q. 25 percent on Page 3.

A. Okay. By the addition of some amount of formic acid. Look at the control and the 2 percent -- about 2 percent formic acid, that would be somewhere in the vicinity of 22 percent or so increase off of that.

In addition, what they found out that when they added this material it creates a distinctive sour effect, that there's apparently no increase in response, and that the use of formic acid as it looks here is not in itself gonna -- gonna be of help in cigarette development. I don't -- I'm not aware of any place where we add formic acid to cigarettes.

The other thing that bothers me about their data, if you go back to table 1, formic acid cigarettes, you take a quick look at what you have here are tar <sup>1b</sup> and nicotine ratios, they ~~they~~ would give you the, you know, they would indicate

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02:21:50 2 that the only thing that changed was nicotine  
02:21:54 3 delivery, and in fact they -- if you subtract out  
02:22:02 4 for -- for the tar, to determine what the tar was  
02:22:04 5 in there, there was also a significant increase  
02:22:10 6 in tar. If I had to guess what happened there,  
02:22:14 7 there were some other changes in there that they  
02:22:16 8 just didn't see when they first reviewed it. So  
02:22:20 9 even though the nicotine did increase in going to  
02:22:26 10 2 percent formic acid additional, there also  
02:22:28 11 seems to be a significant increase in the tar  
02:22:36 12 delivery -- what -- would have both of them  
22:40 13 increased with the puff count remaining the  
02:22:42 14 same? I can't guess today. I didn't know -- I  
02:22:44 15 don't know what the cigarettes are that they were  
02:22:46 16 using there.

02:22:48 17 So what I see in here is some  
02:22:52 18 preliminary work to see what happens when -- when  
02:22:56 19 you put an acid on tobacco, what they found out  
02:23:02 20 is that even though the puff count remained the  
02:23:04 21 same the nicotine increased, which you would not  
02:23:14 22 have necessarily expected, and the tar increased,  
02:23:16 23 and I think they found out that they were not  
02:23:18 24 subjectively acceptable.

23:20 25 Outside of that, I don't know what --

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02:23:20 2 else to say about it.

02:23:28 3 Q. Go back to Page 3 in text. You see  
02:23:30 4 the paragraph right in the center which reads,  
02:23:34 5 "Subsequently, a Marlboro type cigarette whose  
02:23:38 6 filler had been oversprayed with formic acid at  
02:23:40 7 the 3 percent level"?

02:23:40 8 A. Yes.

02:23:44 9 Q. And then go back to table 1 that you  
02:23:50 10 were looking at.

02:23:50 11 A. Yes.

02:23:52 12 Q. Am I correct that table 1 does not  
:23:54 13 have the results of the formic acid at the 3  
02:23:54 14 percent level?

02:24:02 15 A. I'm not really sure where the data  
02:24:04 16 from this might be located. As you point out on  
02:24:10 17 Page 3 they say they attempted to put 3 percent  
02:24:14 18 formic acid on. They say they measured one. *percent* \*

02:24:22 19 Q. And that there was a 25 percent  
02:24:24 20 increase in the nicotine delivery?

02:24:26 21 A. Yeah, but they talk about a whole  
02:24:30 22 smoke pH and the numbers they got over here are  
02:24:34 23 not the same. I don't -- I -- I don't think  
02:24:40 24 table 1 relates to this experiment.

·24:42 25 Q. Oh, I think it does. If you look at

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Page 3 you'll see the reference to table 1 at the bottom, the next paragraph.

MR. MURPHY: Objection to the form of the question. Do you see the bottom of the paragraph, the bottom paragraph on Page 3?

MR. PAYTON: What is your objection?

A. Yeah, but --

MR. MURPHY: You're making a comment and saying I think that it is. You didn't have a question pending. I think you're just trying to have a conversation with the witness. I'm not sure what your question is at the moment, but the point is that there -- I was directing the witness's attention to the paragraph below the one to which you directed him.

MR. PAYTON: All right.

MR. MURPHY: And I just wanted him to read that reference to table 1.

MR. PAYTON: Okay.

Q. Dr. Houghton, do you see the reference to table 1 at the bottom of the page?

A. Yes. But I don't -- I believe that relates to other cigarettes not -- not the one in the paragraph starting "Subsequently, a Marlboro

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02:25:42 2 type."

02:25:46 3 Q. That's right. The reference to table  
02:25:48 4 1 is preceded by a sentence that reads, "A more  
02:25:52 5 extensive series of cigarettes with formic acid  
02:25:54 6 levels ranging from approximately 2 to 8 percent  
02:26:00 7 was then prepared and resubmitted." Do you see  
02:26:00 8 that?

02:26:00 9 A. Yes.

02:26:02 10 Q. And does table 1 appear to reflect  
02:26:04 11 that data?

02:26:06 12 MR. MURPHY: Objection. The document  
26:10 13 speaks for itself. I don't think this question  
02:26:12 14 calls for anything but the witness's speculation  
02:26:14 15 which is no more informed on this point than  
02:26:18 16 yours, John.

02:26:18 17 A. And table 1 --

02:26:20 18 MR. MURPHY: Don't guess,  
02:26:20 19 Dr. Houghton.

02:26:22 20 A. No, I just wanted to reconfirm what I  
02:26:26 21 said before. Table 1, even though it's not  
02:26:28 22 reported, indicates there's also a significant  
02:26:30 23 change in the tar level at the same time.

02:26:34 24 Q. Yes. And can you answer my  
26:38 25 question? Does table 1 appear to relate to the

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02:26:44 2 more extensive series of cigarettes with formic  
02:26:46 3 acid levels ranging from 2 to 8 percent?  
02:26:48 4 MR. MURPHY: Same objection. The  
02:26:50 5 document speaks for itself. Calls for  
02:26:52 6 speculation. Don't guess, Dr. Houghton. If you  
02:26:54 7 know the answer, you can answer the question.  
02:27:04 8 A. I'm gonna -- it says here see table  
02:27:06 9 1. I assume that's what it means.  
02:27:12 10 Q. Okay. Do you know the author of this  
02:27:14 11 report, a J.J. Cipriano?  
02:27:18 12 A. No, I don't.  
27:20 13 Q. Do you know the supervisor of this  
02:27:26 14 report, a C.N. Kounnas, K-o-u-n-n-a-s?  
02:27:30 15 A. I do know Chris Kounnas.  
02:27:32 16 Q. Who is that?  
02:27:36 17 A. He was a flavorist that worked for  
02:27:40 18 Philip Morris at that time, I assume.  
02:27:42 19 MR. MURPHY: That time being  
02:27:44 20 approximately June of 1975?  
02:27:46 21 THE WITNESS: He was -- he was not  
02:27:52 22 employed by Philip Morris when -- when I came to  
02:27:52 23 Richmond from Europe.  
02:27:52 24 Q. He had left?  
27:54 25 A. Yes.

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02:27:56 2 Q. Do you know H.L. Spielberg who is  
02:28:00 3 shown as having approved this report?

02:28:00 4 A. Yes.

02:28:02 5 Q. Who is that?

02:28:08 6 A. Howard Spielberg was a -- 1975 I  
02:28:10 7 don't know what his title was, but he was a  
02:28:16 8 flavorist with Philip Morris.

02:28:18 9 Q. The distribution, the first person on  
02:28:20 10 the distribution is a Dr. H. Wakeham, do you see  
02:28:20 11 that?

02:28:22 12 A. Yes.

28:24 13 Q. Who is Dr. Wakeham?

02:28:30 14 A. He was a former vice president of  
02:28:30 15 R&D.

02:28:36 16 Q. And the keywords box on the front  
02:28:38 17 page has as one of the keywords impact, do you  
02:28:40 18 see that?

02:28:40 19 A. Yes.

02:28:44 20 Q. Do you know what the word impact  
02:28:48 21 means?

02:28:50 22 MR. MURPHY: As used in this  
02:28:50 23 document?

02:28:50 24 MR. PAYTON: As used by Philip  
28:52 25 Morris, yes.

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MR. MURPHY: No, that's a different question. As used in the document, John, or as used by Philip Morris?

Q. Does the word impact have a meaning at Philip Morris?

MR. MURPHY: Object to the form of the question. If you understand what you're being asked, you can answer.

A. I -- I have a -- I have a -- I have a knowledge of what impact means to me. What impact <sup>is for</sup> ~~means to~~ me is when you puff on the cigarette you have -- you get these -- the feeling of the smoke in your mouth and the feeling of the smoke in your throat. That's what impact is. Somebody else might -- might call it harshness, but for me it's the amount of feeling that you get when you take the puff.

Q. Does the word impact have any special meaning as used at the research center?

MR. MURPHY: I object to the form of the question.

A. I don't recall that there's a series of definitions of impact that -- that are used and this is the only meaning of the word.

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Somebody may have defined what impact was for them just as I did.

Q. In describing this report you said that they found no increase in response?

A. I read what it said back here on Page <sup>let me find the one</sup> -- I guess it's Page 7. Is that the one?

"Not only does the necessary addition create a distinct sour effect, but the increased nicotine delivery at lower pH seems to lower rather than increase response."

Q. Do you understand what that sentence means?

A. Apparently there was a sour taste when -- when they smoked the thing, and that they didn't -- didn't get a response that they expected here in the mouth, and I don't know exactly what that individual meant because you go back to the front page and they talk about basic taste sensations as well as sensations of heat, pungency, astringency. So I'm -- I don't know if they're -- if they're using a single definition here, and I don't see what -- what they mean by impact yet.

You go down to the paragraph after



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02:32:46 2 that and they say that "Reducing acidic  
02:32:52 3 constituents of smoke, thereby raising pH and  
02:32:54 4 hopefully impact effects," and I don't know  
02:32:56 5 exactly what they're talking about there.

02:33:02 6 Q. What paragraph are you referring to?

02:33:04 7 A. The one right below the one that  
02:33:06 8 had -- on Page 7 it says "Lower rather than  
02:33:10 9 increased response."

02:33:14 10 Q. You're talking about the paragraph  
02:33:18 11 that begins "As to the possibility of increasing  
02:33:20 12 impact without increasing nicotine delivery"?

33:22 13 A. Yes.

02:33:24 14 MR. MURPHY: That paragraph reads,  
02:33:28 15 just for the record, "As to the possibility of  
02:33:30 16 increasing impact without increasing nicotine  
02:33:34 17 delivery, a modification of smoke pH through  
02:33:36 18 filter additives is also being given some  
02:33:38 19 consideration. Hopefully, the addition of a  
02:33:38 20 basic material to the filter medium might serve  
02:33:44 21 as a sort of sponge on the acidic constituents of  
02:33:46 22 smoke, thereby raising smoke pH and hopefully  
02:33:50 23 impact effects." That was what Dr. Houghton  
02:33:52 24 referred to in his prior testimony.

34:02 25 Q. You want to go back to Page 4,

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02:34:02 2 Dr. Houghton.

02:34:02 3 A. Yes.

02:34:04 4 Q. The paragraph at the very bottom,  
02:34:06 5 "These subjective results seem to be consistent  
02:34:12 6 with the theory that smoke impact" then in parens  
02:34:16 7 it says "(Inhalability) is not so much related to  
02:34:20 8 total nicotine as to the level of unprotonated  
02:34:22 9 nicotine." Do you see that?

02:34:30 10 A. Yes, I see that statement there and  
02:34:34 11 it's attributed to Brunnemann and Hoffmann.

02:34:36 12 Q. Do you know Brunnemann?

34:36 13 A. I know of him.

02:34:38 14 Q. Do you know Hoffmann?

02:34:38 15 A. I know of him.

02:34:40 16 Q. Are you familiar with that theory?

02:34:46 17 A. No, I'm not familiar with that  
02:34:46 18 theory.

02:35:10 19 Q. Do you understand the term  
02:35:12 20 unprotonated nicotine?

02:35:20 21 A. Unprotonated nicotine as I understand  
02:35:24 22 it is nicotine, the compound, nicotine. \*

02:35:26 23 Q. Is it the same as free base nicotine?

02:35:32 24 A. For me it would -- it would have the  
35:34 25 same meaning.

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02:35:36 2 Q. Okay. As opposed to a nicotine salt?

02:35:36 3 A. Correct.

02:35:38 4 MR. MURPHY: Objection to form. You  
02:35:38 5 can answer.

02:36:00 6 Q. Now, Dr. Houghton, do you presently,  
02:36:10 7 today have an understanding of the RL process  
02:36:16 8 that Philip Morris used prior to March 24, 1994?

02:36:18 9 MR. MURPHY: Objection to form.

02:36:20 10 MR. PAYTON: What's the objection to  
02:36:20 11 form?

02:36:22 12 MR. MURPHY: He's already testified  
36:26 13 that he has an understanding as to the RL process  
02:36:28 14 as of the time that he worked at Park 500. But I  
02:36:32 15 think that that's not what you're asking about.

02:36:32 16 MR. PAYTON: That's not what I'm  
02:36:34 17 asking.

02:36:34 18 Q. I'm asking if you --

02:36:36 19 MR. MURPHY: Your question was  
02:36:36 20 confusing.

02:36:40 21 Q. With respect to how the RL process  
02:36:58 22 operated when you were the manager of --  
02:37:00 23 actually, let me just give you the time frame,  
02:37:04 24 from 1974 to 1983, and I believe for that period  
37:10 25 of time you had some connection one way or

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02:37:14 2 another with the RL process with Park 500?

02:37:14 3 A. That's correct.

02:37:16 4 Q. You were either working there or you  
02:37:22 5 were the head, the manager of the Richmond  
02:37:22 6 processing facilities?

02:37:24 7 A. Yes.

02:37:30 8 Q. Today sitting here, do you remember  
02:37:38 9 how the RL process through that time period  
02:37:40 10 operated in any detail?

02:37:50 11 A. If you're asking me do I under --  
02:37:56 12 recall the process and -- and how we -- we ran  
02:37:56 13 it --

02:37:58 14 Q. That's what I'm asking.

02:38:00 15 A. I may forget some of the details at  
02:38:04 16 that time, but I had a -- I had a fairly good  
02:38:06 17 knowledge of the process at one time.

02:38:12 18 Q. You had a fairly good knowledge of  
02:38:16 19 the process at one time, but do you still have  
02:38:16 20 that knowledge of the process, that's what I'm  
02:38:18 21 asking?

02:38:18 22 MR. MURPHY: Does he still remember  
02:38:20 23 or does he know the process as it's currently in  
02:38:22 24 place at Park 500?

02:38:24 25 Q. Do you remember how it ran during

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that time period?

MR. MURPHY: Objection. I think this is a silly question, but if you want to answer it you can.

A. I believe I do.

Q. And do you have knowledge as to how the process at the RL facility ran as of March 24, 1994?

A. I -- I'm not that familiar with the process to date. It's -- it's been improved as far as their operation, and I'm not that close to it today.

MR. MURPHY: And by today you mean March 24, 1994?

THE WITNESS: Yes.

MR. PAYTON: Would you mark this as Exhibit 14.

(Houghton Exhibit 14 for identification, document entitled "1989 to 1993 PM U.S.A. R&D strategic plans," dated February 1, 1989, production numbers PB 135003 through PB 135206 or 202133743 through 2021337617.)

Q. Dr. Houghton, you've just been handed what's been marked as Houghton Exhibit 14, a

1 Houghton - Highly Confidential - Trade Secret  
2 document entitled the "1989 to 1993 PM U.S.A. R&D  
3 strategic plans," dated February 1, 1989. It has  
4 production numbers PB 135003 through PB 135206 or  
5 202133<sup>7413</sup> through 2021337617. \*

02:41:06 6 Dr. Houghton, are you familiar with  
02:41:12 7 PM U.S.A. R&D strategic plans?

02:41:14 8 A. Are you asking me in general --

02:41:16 9 Q. Yes.

02:41:16 10 A. -- or specifically do I recall what's  
02:41:18 11 in this document?

02:41:20 12 Q. No, I'm asking you in general.

41:22 13 A. In general I'm aware of strategic  
02:41:24 14 planning, yes.

02:41:28 15 Q. And this is a document that is  
02:41:28 16 produced annually?

02:41:34 17 A. We in R&D would produce a five-year  
02:41:38 18 plan on an annual basis, yes.

02:41:54 19 Q. And who's responsible in R&D for the  
02:41:56 20 production of the strategic plans?

02:42:04 21 A. This would have been worked on in  
02:42:14 22 1988. I'd be guessing as to who had the  
02:42:16 23 responsibility for putting the total plan  
02:42:20 24 together. I'm not really positive in 1988.

42:22 25 Q. Is it by a position? Is there an

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02:42:28 2 office that is responsible for putting together  
02:42:30 3 the R&D strategic plans?

02:42:32 4 MR. MURPHY: Objection to form. You  
02:42:32 5 can answer it.

02:42:34 6 A. If I recall at that time what we had  
02:42:38 7 would be a planning committee that would be set  
02:42:44 8 up with members from the different divisions,  
02:42:48 9 nominated by -- by directors or VP to work on  
02:42:56 10 developing a strategic plan for the next  
02:43:02 11 five-year period. The -- I believe at that time  
02:43:08 12 the overall leadership for strategic planning  
13:16 13 was -- I believe at that time it was the -- the  
02:43:20 14 overall management of this -- this process was  
02:43:26 15 handled by Cliff Lilly. I'm just not quite sure  
02:43:28 16 in 1988, but I believe that's who would have had  
02:43:32 17 the overall responsibility for getting the work  
02:43:34 18 accomplished.

02:43:38 19 Q. And did Cliff Lilly report directly  
02:43:38 20 to you?

02:43:38 21 A. Yes.

02:43:52 22 Q. Do you know how the strategic plans  
02:43:58 23 are distributed? Let me ask a different  
02:44:00 24 question. Are they distributed outside of R&D?

14:08 25 A. I don't recall specifically, but this

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document that you gave me a copy of says copy  
number 10 that went to Mark Serrano and I guess  
you could say he was outside of R&D in the sense  
that he was the executive VP of operations at  
that time.

Q. Do you know if it was sent to the  
executive vice president for operations on a  
regular basis?

A. I don't know for sure, and that  
position did not exist after 1992.

Q. Okay. And do you know if after 1992  
the strategic plan was sent to the president and  
CEO?

A. I don't know, but there -- there must  
be a distribution list on it.

Q. Do you recall if it was sent to  
anyone else outside of R&D besides Mr. Serrano?

MR. MURPHY: After 1992?

MR. PAYTON: No, before 1992.

MR. MURPHY: Before 1992.

A. I just -- I have no knowledge of what  
the distribution might have been back in the  
past.

Q. Do you recall whether or not the



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02:45:38 2 strategic plan was ever -- the R&D strategic plan  
02:45:44 3 was ever discussed at operations meetings?

02:45:46 4 MR. MURPHY: Object to the form of  
02:45:48 5 the question. Do you understand the question?

02:45:54 6 A. Are you asking if R&D would -- would  
02:46:02 7 present an entire strategic plan at an operations  
02:46:02 8 meeting?

02:46:04 9 Q. Or make a presentation of its  
02:46:06 10 strategic plan at an operations meeting?

02:46:08 11 A. At a -- okay.

02:46:10 12 MR. MURPHY: Same objection to form.  
16:10 13 You can answer.

02:46:14 14 A. At an operations meeting we might  
02:46:22 15 review a progress against a part of the plan but  
02:46:26 16 I don't know if we could have covered all of this  
02:46:34 17 in one meeting. But, you know, if we had an  
02:46:36 18 operations plan it may be one of the developments  
02:46:40 19 or directions that -- that we were looking at  
02:46:42 20 might be reviewed.

02:47:08 21 Q. I ask you to go to Page 19. I'm  
02:47:12 22 looking at the bottom of the page, it says "R&D  
02:47:20 23 suppliers" and I want to ask you a few questions  
02:47:24 24 about this section. If you want to read that  
17:30 25 paragraph, I believe there is no other reference

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02:47:32 2 in this document to what's in that paragraph  
02:47:40 3 except for that paragraph.

02:48:54 4 A. Okay. You want me to read the whole  
02:48:56 5 section, all of it?

02:48:58 6 Q. No, I actually intend only to ask you  
02:49:02 7 some questions about the flavor house project  
02:49:04 8 here and I believe --

02:49:04 9 A. That's the first full paragraph we're  
02:49:06 10 talking about?

02:49:06 11 Q. Yes.

02:49:08 12 A. Okay.

49:10 13 Q. It's the paragraph that starts on 19  
02:49:12 14 and runs over to 20. Dr. Houghton, do you  
02:49:22 15 remember this effort to understand what it was  
02:49:26 16 that you were receiving from flavor houses, that  
02:49:30 17 Philip Morris was receiving from flavor houses?

02:49:30 18 A. Yes.

02:49:32 19 Q. What do you remember about this?

02:49:36 20 A. At the -- if I might, I'd like to put  
02:49:44 21 in a little history so you understand. The  
02:49:48 22 cigarette Safety Act, I guess it was 1984, and I  
02:49:52 23 believe that's what it was, required that the  
02:49:58 24 tobacco companies on a yearly basis submit a list  
50:00 25 of ingredients used in the manufacturing of

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02:50:08 2 cigarettes to the Department of Health & Human  
02:50:12 3 Services, and I believe that requirement went  
02:50:20 4 into effect, the first list was to be submitted  
02:50:26 5 the end of 1986 and then submitted on an annual  
02:50:30 6 basis thereafter. And as a result of a lot of  
02:50:38 7 negotiations on how to handle the thing, the  
02:50:38 8 decision was that -- that the six major tobacco  
02:50:42 9 companies in the United States would submit their  
02:50:48 10 ingredients to a legal firm, Covington & Burling,  
02:50:54 11 in Washington, and Covington & Burling would take  
02:50:58 12 the input from the six companies, fold it  
01:02 13 together so there would be one list submitted  
02:51:04 14 from the industry to the Department of Health &  
02:51:10 15 Human Services, and that's the Office of Smoking  
02:51:16 16 and Health which is now the office that Eriksen  
02:51:18 17 has. I forget who had it back then.  
02:51:20 18 So the first list was submitted in  
02:51:26 19 1986. Now, during the time frame '84 to '86 a  
02:51:30 20 lot of work was done with suppliers to have  
02:51:38 21 suppliers give to us certified qualitative and  
02:51:42 22 quantitative information on ingredients that they  
02:51:48 23 used either in compounded flavors they supplied  
02:51:52 24 to us or directly to us.  
1:54 25 So as a result of that, a lot of

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02:52:00 2 information was generated on what it was that we  
02:52:06 3 were purchasing from the flavor houses.

02:52:10 4 Now, in -- we had in 1986 I think  
02:52:14 5 submitted, the first list went in from the  
02:52:18 6 industry, and at the time what we were relying on  
02:52:24 7 was the -- the submission that we received from  
02:52:30 8 the flavor houses. Now, the flavor houses at  
02:52:36 9 that time for sure felt that their most important  
02:52:40 10 asset was what they knew and you didn't, okay, so  
02:52:46 11 there was -- there were a lot of constraints that  
02:52:48 12 we agreed to relative to the handling of this  
52:54 13 information. And it was in order to provide the  
02:52:58 14 supplier with a sense of security that they  
02:53:02 15 wouldn't give that information to somebody in my  
02:53:04 16 organization who would then run over to somebody  
02:53:08 17 else in the organization and try and use that  
02:53:14 18 information to -- to eliminate the need for the  
02:53:16 19 supplier, okay.

02:53:18 20 So as a result of that, you know,  
02:53:22 21 there was a rather limited number of people who  
02:53:24 22 had access to the actual information supplied by  
02:53:26 23 the flavor houses, and we agreed to that because  
02:53:30 24 we needed the information.

53:38 25 So here we are in 1987, okay, because

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02:53:40 2 I think this is talking about right after the '86  
02:53:44 3 list, this is talking about the '87 strategic  
02:53:52 4 plan. What we did is we put together -- we put  
02:53:58 5 together a group of scientists whose job it was  
02:54:04 6 to take samples of these materials as supplied by  
02:54:08 7 the flavor houses and start to develop a set of  
02:54:14 8 specifications for each of these ingredients one  
02:54:16 9 by one, and they had to do that without the help  
02:54:20 10 of the information supplied by -- by the flavor  
02:54:22 11 houses itself.

02:54:22 12 Q. I see.

54:26 13 A. So I think at the time we estimated  
02:54:28 14 it would take us a couple of years to get through  
02:54:32 15 generating a set of specifications based upon  
02:54:36 16 their samples, which would allow us to make sure  
02:54:38 17 that the information we had received from them  
02:54:46 18 was accurate, because we weren't sure how -- how  
02:54:50 19 capable their analytical organizations might have  
02:54:50 20 been.

02:54:54 21 So we got to generate our own  
02:54:58 22 information. That information was used to start  
02:55:08 23 specifying specification parameters to give to  
02:55:12 24 the purchasing department who in turn would then  
55:16 25 sit with the supplier, negotiate the final

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02:55:18 2 specification for the material that the supplier  
02:55:22 3 agreed that they could meet, et cetera.

02:55:24 4 At the same time, in R&D we developed  
02:55:30 5 these analytical procedures which were then  
02:55:36 6 transferred, the procedures were transferred from  
02:55:42 7 R&D to the flavor center which then established a  
02:55:44 8 more sophisticated laboratory to be able to do  
02:55:46 9 this kind of analysis.

02:55:54 10 So over time what we did is we really  
02:56:00 11 set up new procedures. We were able to check the  
02:56:04 12 suppliers to ensure that what we were getting was  
02:56:06 13 what we were supposed to get. Then there was an  
02:56:10 14 agreement between purchasing and the supplier and  
02:56:20 15 basically, what we -- we started as a result of  
02:56:20 16 that in the flavor center was an incoming quality  
02:56:24 17 control to help ensure that if we put in this --  
02:56:26 18 our submission on the ingredient list what we  
02:56:30 19 were putting in was correct.

02:56:30 20 MR. MURPHY: I would direct your  
02:56:34 21 attention also, Dr. Payton -- I mean  
02:56:36 22 Dr. Houghton, excuse me, to another section of  
02:56:40 23 this report that in fact does relate to the same  
02:56:42 24 subject as Page 20.

02:56:44 25 MR. PAYTON: Where's that?

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02:56:46 2 MR. MURPHY: If you look at the  
02:56:50 3 heading on the bottom of Page 56, John, and the  
02:56:56 4 subsequent paragraph at the top of Page 57, I  
02:56:58 5 just wanted Dr. Houghton to be aware of that  
02:57:02 6 section of this document.

02:57:10 7 MR. PAYTON: I apologize, I had  
02:57:16 8 neglected this section. I actually even had a  
02:57:18 9 little flag on it.

02:57:22 10 Q. Yes, you should look at that. It is  
02:57:24 11 essentially a summary of the earlier section.

02:57:26 12 MR. MURPHY: As I listened to  
02:57:28 13 Dr. Houghton's answer I just wanted to make sure  
02:57:30 14 that he had an opportunity to look at this  
02:57:32 15 section of the document.

02:57:34 16 MR. PAYTON: Yes.

02:57:34 17 A. I'm not sure if we hadn't read that  
02:57:38 18 that wouldn't have done a better job of  
02:57:40 19 summarizing what I remembered. Okay. Thank  
02:57:40 20 you.

02:57:50 21 Q. Dr. Houghton, how accurate was the  
02:57:58 22 ingredients list that the flavor houses had  
02:58:00 23 submitted to Philip Morris?

02:58:04 24 A. In doing our analysis on occasions we  
02:58:12 25 may -- we might have had some material or a peak

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in there that we identified that was not  
identified by the supplier at the original ~~type~~ <sup>TYPE</sup> \*  
type.

On those kinds of occasions, the people who had  
the information at the supplier, get back with  
them, show them what we found, et cetera.

If some of the times they had already  
made changes, okay, as our request and as a  
result of that, we might analytically find that  
we had already gotten the change implemented but  
it just hadn't been reflected in their submission  
yet because they -- they would come back about  
once a year and tell us, yes, we have eliminated  
this, we've had to add this because of that.

In general, they were pretty good.  
They were pretty good. It was a lot of work to  
get ourselves in that position where we felt  
comfortable that we were doing the right thing  
relative to understanding what we were buying and  
making sure that suppliers were meeting our  
requirements.

Q. And when was this project actually  
completed? I'm just asking roughly.

A. I'm gonna guess, we're talking about  
starting in '87 relative to just the area of



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02:59:54 2 flavor ingredients probably was two years or  
02:59:56 3 more.

02:59:58 4 MR. MURPHY: When you speak, John, in  
02:59:58 5 terms of the project being completed I don't want  
03:00:02 6 there to be any implication that monitoring of  
03:00:04 7 ingredients has not continued. This project was  
03:00:08 8 a particular effort driven by the needs of that  
03:00:12 9 time. But I think the testimony is clear that  
03:00:16 10 ingredients analysis has continued to be done.

03:00:22 11 MR. PAYTON: Let me just --

03:00:22 12 MR. MURPHY: If you want to just --

00:24 13 MR. PAYTON: I'll just clarify that.  
03:00:26 14 I hear you.

03:00:26 15 MR. MURPHY: Okay.

03:00:28 16 Q. The initial project was designed to  
03:00:36 17 essentially learn the specifications of what you  
03:00:38 18 were receiving from the flavor houses?

03:00:40 19 A. Well, really was for us to  
03:00:44 20 independently develop knowledge on what we were  
03:00:48 21 receiving ~~in~~ <sup>ADD</sup> the set specifications and then be ~~X~~  
03:00:52 22 able to turn that information, both the  
03:00:54 23 procedures as well as the specification to  
03:00:58 24 purchasing ~~the~~ <sup>ADD</sup> the flavor center. ~~X~~

01:00 25 But if there's a new material that's

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03:01:04 2 gonna be used or if there's a modified flavor, we  
03:01:06 3 would still do the initial work and then provide  
03:01:10 4 it to purchasing today or to the flavor center  
03:01:14 5 today on methodology improvements.

03:01:20 6 Q. This is essentially a baseline and  
03:01:22 7 you get additional information if there's a  
03:01:24 8 change in what you purchased from a flavor house  
03:01:26 9 or if they changed what they supplied?

03:01:28 10 A. Yes.

03:01:28 11 MR. MURPHY: Objection to form.

03:01:32 12 A. Yeah. It's a continuous improvement,  
01:38 13 checking, modifying, reducing ingredients.

03:01:52 14 MR. MURPHY: John, it's about 3  
03:01:54 15 o'clock. Would this be a convenient time to  
03:01:56 16 break? I don't want to interrupt this line of  
03:02:00 17 questions, but I think it would be helpful if we  
03:02:02 18 can take a short break in a moment.

03:02:04 19 MR. PAYTON: Let's take a break and  
03:02:04 20 change the tape.

03:02:06 21 THE VIDEO OPERATOR: We're going off  
03:02:08 22 the record. This is the end of videotape number  
03:02:10 23 4. The time on the screen is 3:02:11.

03:23:26 24 (A recess was taken.)

13:52 25 THE VIDEO OPERATOR: This is

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2058443308

1 Houghton - Highly Confidential - Trade Secret  
03:23:54 2 videotape number 5, the continuation of the  
03:23:58 3 deposition of Dr. Kenneth Houghton. Today is  
03:24:02 4 July 25th, 1995. The time on the screen is  
03:24:06 5 3:24:04. You're on the record.

03:24:16 6 Q. Dr. Houghton, the analysis of the  
03:24:22 7 flavors that Philip Morris was purchasing from  
03:24:30 8 flavor houses that was completed sometime in the  
03:24:34 9 late 1980s, 1989 or so, am I right, that's about  
03:24:36 10 when it was completed?

03:24:38 11 A. I believe that -- that was when we  
03:24:44 12 finished going through all of the hundreds of  
24:44 13 materials.

03:24:48 14 Q. Before that time, did Philip Morris  
03:24:54 15 know the nicotine content of the flavors that it  
03:24:56 16 purchased from the flavor houses?

03:24:58 17 MR. MURPHY: Object to the form of  
03:24:58 18 the question. You can answer it.

03:25:00 19 A. Are you -- are you asking me if  
03:25:06 20 Philip Morris was aware of the nicotine content  
03:25:10 21 and what -- of these flavor tobacco extracts? I  
03:25:12 22 really don't know.

03:25:22 23 Q. Dr. Houghton, do you know who would  
03:25:24 24 know the answer to that question?

25:30 25 A. I have to guess.

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03:25:32 2 Q. Just give me your --

03:25:32 3 MR. MURPHY: Don't guess,

03:25:34 4 Dr. Houghton --

03:25:36 5 Q. -- your judgment as to who would know  
03:25:36 6 the answer to that question. And don't guess.

03:25:38 7 MR. MURPHY: If you have any  
03:25:40 8 knowledge or information as to who knows the  
03:25:42 9 answer to that question or who would know the  
03:25:44 10 answer to that question, you can provide  
03:25:46 11 knowledge or information. I don't want you to  
03:25:48 12 guess and I don't think Mr. Payton is asking you  
25:48 13 to do that.

03:25:52 14 A. It would be a guess. I don't think I  
03:25:54 15 can give you a specific name.

03:26:02 16 Q. Was there an individual who was in  
03:26:08 17 charge of this analysis of the flavors that  
03:26:10 18 Philip Morris was analyzing from the flavor  
03:26:12 19 houses?

03:26:18 20 A. Well, there were individuals who had  
03:26:26 21 different responsibilities. At this time, the  
03:26:30 22 person who had access to the information from the  
03:26:34 23 flavor houses of their quantitative or  
03:26:42 24 qualitative information was Frank Daylor, but I  
6:46 25 don't recall who was the leader of the group that

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1 did the analytical work on the samples who did  
03:26:50 2 not have access to that information. I just  
03:26:52 3  
03:26:54 4 don't recall who it was.

03:27:02 5 Q. But this was done within R&D?

03:27:02 6 A. Yes.

03:27:06 7 MR. MURPHY: "This" being the  
03:27:12 8 analytical work on the samples, John?

03:27:12 9 MR. PAYTON: Yes.

03:27:12 10 A. Yes.

03:27:16 11 Q. Dr. Houghton, do you recall if there  
03:27:16 12 was a point in time when some part of this  
27:18 13 project or any future analyses of flavors was  
03:27:24 14 turned over to the flavor center?

03:27:30 15 MR. MURPHY: Objection to form. You  
03:27:30 16 can answer.

03:27:32 17 A. As I mentioned before, what we were  
03:27:32 18 doing <sup>12</sup> ~~was~~ developing analytical procedures and \*  
03:27:36 19 looking at retained samples or new shipment  
03:27:42 20 samples to see how consistent the materials were  
03:27:44 21 and whether we could set specifications for  
03:27:54 22 what -- what the flavor center should find when  
03:27:54 23 they test a new shipment.

03:27:56 24 What we gave them were the analytical  
28:02 25 procedures and I believe we gave them the

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03:28:06 2 reference kind of information to compare back  
03:28:08 3 to.

03:28:10 4 Now, what would happen if -- if we  
03:28:14 5 were developing a new flavor or we were modifying  
03:28:16 6 an existing flavor?

03:28:18 7 Q. Exactly.

03:28:22 8 A. Then we would in R&D, generate the  
03:28:26 9 new information, reference, specification, et  
03:28:28 10 cetera, and then that would be given both to  
03:28:34 11 purchasing in order to communicate with -- with  
03:28:38 12 the supplier on what the new specifications would  
03:28:42 13 be, and the new reference information or new  
03:28:42 14 testing methodologies, if required, would be  
03:28:44 15 given to the flavor center.

03:28:56 16 Q. Let me go back for just a second to  
03:29:00 17 Exhibit, I'm sorry, Exhibit I've forgotten the  
03:29:06 18 number, where we were looking at the study that  
03:29:18 19 related to manipulation of nicotine delivery by  
03:29:22 20 addition of acids to filler. Do you have that in  
03:29:24 21 front of you there?

03:29:24 22 MR. MURPHY: Houghton Exhibit 13.

03:29:30 23 Q. Okay, Exhibit 13. Dr. Houghton, I  
03:29:40 24 saw that you made two or three little notes or  
9:50 25 numbers on table 1. Do you have the table 1 you

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03:29:50 2 wrote on in front of you?

03:29:50 3 A. Yes.

03:29:54 4 Q. Could you just identify where you  
03:29:54 5 made your notes?

03:30:00 6 A. I wrote them in a column called  
03:30:04 7 control between the line TPM and the line  
03:30:06 8 nicotine in TPM.

03:30:10 9 Q. Okay, and --

03:30:10 10 A. And for approximately two -- it looks  
03:30:14 11 like approximately 2 percent F.A. between the  
03:30:18 12 line that says TPM and the line that says  
30:20 13 nicotine in TPM.

03:30:22 14 Q. And the first number you wrote in  
03:30:28 15 which is between the numbers 19.7 and 1.01?

03:30:28 16 A. Yes.

03:30:28 17 Q. What's the number you wrote in?

03:30:30 18 A. I wrote in 17.

03:30:32 19 Q. And the number you wrote in between  
03:30:34 20 the number 23.1 and 1.24?

03:30:36 21 A. I wrote 19.7.

03:30:44 22 Q. Okay. What did the 17 refer to that  
03:30:44 23 you wrote in?

03:30:48 24 A. Well that's the difference between  
30:50 25 19.7 and 2.7.

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Q. Got it. And the 19.7 you wrote in, why did you put that number between the 23.1 and the 1.24?

MR. MURPHY: Objection to form. You can answer what your notation depicted.

A. What I did is I subtracted 3.4 from 23.1.

MR. MURPHY: 3.4 being the entry for H<sub>2</sub>O milligrams per cigarette?

THE WITNESS: Yes.

Q. TPM is total particulate matter?

A. That's correct.

Q. And what's the relationship between total particulate matter and nicotine and H<sub>2</sub>O?

MR. MURPHY: Objection to form. Do you understand what he's asking you?

THE WITNESS: I think I do.

A. Total particulate matter consists of what we would refer to as tar plus water plus nicotine.

Q. And your subtractions were designed to yield the tar number; is that correct?

A. No, I needed to make one more subtraction.

MANHATTAN REPORTING CORP.

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03:32:36 2 Q. Okay, and what would that be?

03:32:38 3 A. Subtract the nicotine.

03:32:40 4 Q. Ah, yes.

03:32:40 5 A. Okay.

03:32:42 6 Q. And if you subtracted the nicotine

03:32:44 7 that would give you the tar numbers?

03:32:44 8 A. Yes.

03:32:46 9 Q. I see. You were just trying to make  
03:32:46 10 rough calculations?

03:32:48 11 A. I was just trying to understand did  
03:32:52 12 the tar also change or was there just a change in  
32:56 13 the nicotine, because normally I would expect if  
03:32:58 14 nicotine changes tar to change because tar and  
03:33:08 15 nicotine track each other, and in fact I think  
03:33:12 16 the data here indicates that if you subtract out  
03:33:18 17 the one milligram of nicotine in the control and  
03:33:22 18 the 1.24 in that first sample, whatever it was,  
03:33:28 19 that it does show that the tar also increased,  
03:33:30 20 not just the nicotine.

03:33:34 21 Q. When you say that tar tracks  
03:33:44 22 nicotine -- I see. Let me say it the way you  
03:33:50 23 said it. You said that tar and nicotine track  
03:33:52 24 each other. What did you mean by that?

34:00 25 A. If you take a look at a full flavored

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03:34:04 2 cigarette, it's delivering, for instance, 16  
03:34:10 3 milligrams of tar and one milligram of nicotine,  
03:34:16 4 and you reduce the delivery of that cigarette,  
03:34:18 5 reduce the tar delivery you'll also reduce the  
03:34:20 6 nicotine delivery.

03:34:26 7 Q. Proportionally?

03:34:28 8 MR. MURPHY: Objection to form. You  
03:34:28 9 can answer.

03:34:30 10 Q. Will the reduction in nicotine be  
03:34:32 11 proportional to the reduction in tar?

03:34:36 12 A. In general, yes.

03:34:50 13 Q. I asked you yesterday about a low  
03:34:52 14 tar/high nicotine cigarette, do you recall that?

03:35:04 15 A. You asked me about a cigarette that I  
03:35:06 16 recalled Howard Spielberg bringing to me, right.

03:35:08 17 Q. Yes, a low tar/high nicotine  
03:35:10 18 cigarette; is that correct?

03:35:14 19 A. It was a 5 milligram tar, 1 milligram  
03:35:16 20 smoke nicotine. I believe that it was designed  
03:35:18 21 for, I think I have the paper there.

03:35:32 22 Q. Yes. Is a 5 milligram tar and a 1  
03:35:36 23 milligram nicotine cigarette a low tar/high  
03:35:38 24 nicotine cigarette?

5:40 25 MR. MURPHY: Objection to form. You

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03:35:40 2 can answer.

03:35:46 3 A. It is a cigarette that on a tar basis  
03:35:48 4 you would call ultra light. It had a nicotine  
03:35:52 5 content in that product or that he hand made for  
03:35:54 6 me that was higher than I would expect for a 5  
03:35:56 7 milligram cigarette.

03:36:54 8 Q. Could you pull Exhibit 9 out and take  
03:37:36 9 a look at it, Dr. Houghton. Dr. Houghton, do you  
03:37:50 10 know if Philip Morris has the technical ability  
03:37:58 11 to produce a low tar/high nicotine cigarette?

03:37:58 12 MR. MURPHY: Objection to form. You  
8:00 13 can answer.

03:38:10 14 A. I would not know how to make this  
03:38:16 15 cigarette except through possibly what -- what it  
03:38:20 16 indicates here the recommendation of Spielberg to  
03:38:24 17 do, or Spielberg or Heretick.

03:38:32 18 Q. Could you look at Exhibit whatever  
03:38:34 19 the large exhibit is at the bottom of your  
03:38:36 20 stack.

03:38:42 21 MR. BROWN: Exhibit 2.

03:38:44 22 Q. Exhibit 2, yes, that exhibit which is  
03:38:46 23 the list of nicotine-related research and go to  
03:39:00 24 Page 24 are you on Page 24?

9:00 25 Q. Yes.

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03:39:02 2 A. Do you see the fourth item from the  
03:39:08 3 top, it says "Author/researcher Meyer, L.F.," and  
03:39:12 4 the title is "Low tar/high nicotine cigarettes,"  
03:39:14 5 dated February 28, 1986?

03:39:16 6 A. Yes.

03:39:18 7 Q. That's the same date and the same  
03:39:22 8 author as this letter, do you see that?

03:39:22 9 A. Yes.

03:39:28 10 Q. Do you recall this study?

03:39:30 11 MR. MURPHY: Objection to form. I  
03:39:32 12 think this has been asked and answered. Are you  
39:34 13 asking him a different question, John?

03:39:36 14 MR. PAYTON: I have never pointed him  
03:39:38 15 to this study in this document.

03:39:40 16 MR. MURPHY: You've asked him at  
03:39:40 17 length about --

03:39:42 18 MR. PAYTON: The letter.

03:39:42 19 MR. MURPHY: -- the preparation of  
03:39:46 20 the prototype by Mr. Spielberg in or about  
03:39:52 21 February of 1986. I'm not sure I understand then  
03:39:52 22 what your question is.

03:39:54 23 Q. Do you believe these are the same  
03:39:56 24 item?

39:56 25 MR. MURPHY: Is that your question

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03:39:02 2 A. Do you see the fourth item from the  
03:39:08 3 top, it says "Author/researcher Meyer, L.F.," and  
03:39:12 4 the title is "Low tar/high nicotine cigarettes,"  
03:39:14 5 dated February 28, 1986?

03:39:16 6 A. Yes.

03:39:18 7 Q. That's the same date and the same  
03:39:22 8 author as this letter, do you see that?

03:39:22 9 A. Yes.

03:39:28 10 Q. Do you recall this study?

03:39:30 11 MR. MURPHY: Objection to form. I  
03:39:32 12 think this has been asked and answered. Are you  
:39:34 13 asking him a different question, John?

03:39:36 14 MR. PAYTON: I have never pointed him  
03:39:38 15 to this study in this document.

03:39:40 16 MR. MURPHY: You've asked him at  
03:39:40 17 length about --

03:39:42 18 MR. PAYTON: The letter.

03:39:42 19 MR. MURPHY: -- the preparation of  
03:39:46 20 the prototype by Mr. Spielberg in or about  
03:39:52 21 February of 1986. I'm not sure I understand then  
03:39:52 22 what your question is.

03:39:54 23 Q. Do you believe these are the same  
03:39:56 24 item?

:39:56 25 MR. MURPHY: Is that your question

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03:39:58 2 for the witness?

03:39:58 3 Q. Do you know if there was a study on  
03:40:02 4 low tar/high nicotine cigarettes?

03:40:04 5 A. Well, my guess in looking at this,  
03:40:04 6 this is the same thing.

03:40:06 7 Q. You think it's the same thing?

03:40:12 8 A. Yeah. I think this thing -- this I  
03:40:12 9 assume was in central file and that's where this  
03:40:20 10 came from. That's what I assume. Yeah, I don't  
03:40:22 11 think these are two different things. I think  
03:40:24 12 this is -- this letter is referred to here.

40:30 13 Q. Dr. Houghton, are you aware of any  
03:40:40 14 other research that Philip Morris has done with  
03:40:44 15 respect to a low tar/high nicotine cigarette?

03:40:50 16 A. All I know is in this letter it's --  
03:40:56 17 it refers to some work apparently Dr. Ikeda  
03:41:06 18 showed Leo apparently. I'm -- I don't -- I don't  
03:41:08 19 know that work, but outside of this letter I'm --  
03:41:10 20 I don't recall anything.

03:41:32 21 Q. Let's go back to Houghton Exhibit 14,  
03:41:36 22 the R&D strategic plan is what I'm --

03:41:36 23 A. Ah.

03:41:38 24 MR. MURPHY: The other big one.

41:54 25 Q. The other big one. I'd like you to

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03:42:06 2 turn to Page 35. Do you see the heading "(c)

03:42:14 3 Obsolescence of our current product"?

03:42:14 4 A. Yes, I see it.

03:42:16 5 Q. Without reading that, I'm not asking

03:42:18 6 you to read that, I want to know if you recall

03:42:26 7 that topic, the obsolescence of current product?

03:42:28 8 MR. MURPHY: Objection. I mean I

03:42:30 9 think he has to read the way in which that phrase

03:42:32 10 is being used in order to understand what that

03:42:34 11 topic is, John.

03:42:34 12 Q. Do you have to read that to

42:36 13 understand how that phrase is being used?

03:42:40 14 A. Yes. Can I have just a minute for

03:42:42 15 just a second. I want to see something else in

03:42:44 16 here since I opened it up.

03:42:44 17 Q. All right.

03:42:58 18 A. Just something caught my eye, okay.

03:43:00 19 Yeah, can I read the paragraph?

03:43:20 20 Q. Sure. I think it's the two

03:43:24 21 paragraphs.

03:44:36 22 A. Okay. I'll take a look at what this

03:44:36 23 is supposed to be.

03:44:40 24 Q. Sure. You mean what this section is?

44:44 25 A. Yeah, what is it in general? It

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03:45:16 2 looks like -- analysis of future factors. Okay.

03:45:20 3 Q. Do you recall this subject?

03:45:24 4 A. Do I recall --

03:45:26 5 Q. Obsolescence of current product?

03:45:38 6 A. I recall the -- what's being  
03:45:42 7 discussed in here and maybe not by the title  
03:45:44 8 obsolescence of current product, but more in  
03:45:46 9 light of what are the kinds of products we need  
03:45:48 10 to develop for the future.

03:46:06 11 Q. And do you recall these products that  
03:46:10 12 may have to be developed for the future being  
46:12 13 referred to as nicotine delivery devices?

03:46:14 14 MR. MURPHY: Objection to form.

03:46:24 15 A. What I recall of what we did, Delta  
03:46:34 16 was based upon heating tobacco. Where is Sigma?  
03:46:38 17 Sigma is in here and Sigma only had ART tobacco  
03:46:42 18 during the development, if I recall correctly.  
03:46:48 19 And Beta delivers, generates smoke from tobacco.  
03:46:52 20 So as such, they all have tobacco and they all  
03:46:54 21 produce smoke and they all, with the exception of  
03:46:56 22 Sigma, Sigma, that development I believe was  
03:47:02 23 based upon using ART tobacco.

03:47:04 24 So relative to that position I  
47:08 25 wouldn't call any of those things a nicotine

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delivery system. These are tobacco products.

Q. Dr. Houghton, in 1988 the Surgeon  
General issued his report on nicotine and  
addiction. Do you recall that?

A. Yes, sir.

Q. Have you read the 1988 Surgeon  
General's report?

A. I read it at the time.

MR. PAYTON: You sure do produce some  
huge strategic reports. Would you mark this as  
Exhibit 15.

(Houghton Exhibit 15 for  
identification, 1991 through 1995 Philip Morris  
U.S.A. R&D strategic plan, production numbers PB  
135207 through PB 135819 and 2021342774 through  
2021343387.)

A. Do you mind if I read through this in  
detail?

Q. Well, take a minute. Dr. Houghton,  
you've just been handed what's been marked  
Houghton Exhibit 15, the 1991 through 1995 Philip  
Morris U.S.A. R&D strategic plan. It has  
production numbers PB 135207 through PB 135819  
and 2021342774 through 2021343387.

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03:50:26 2 A. Okay.

03:50:36 3 Q. Dr. Houghton, what I'd actually like  
03:50:38 4 you to look at is what is labeled in here as  
03:50:52 5 appendix M and it is about -- I'd say four-fifths  
03:50:54 6 of the way through it has production number PB  
03:50:56 7 135692.

03:51:00 8 A. 1356 --

03:51:00 9 MR. MURPHY: 92.

03:51:02 10 Q. 92 and it is a collection of patents?

03:51:04 11 A. Okay.

03:51:16 12 Q. Keep going.

03:51:18 13 A. 692 you said?

03:51:20 14 MR. MURPHY: 692.

03:51:44 15 Q. That's right. Are you there,  
03:51:46 16 Dr. Houghton?

03:51:46 17 A. Yes.

03:51:48 18 Q. Appendix A is entitled "Patents  
03:51:52 19 related to obsolescence of the current product."

03:51:52 20 A. Yes.

03:52:02 21 Q. I don't actually want you to read the  
03:52:06 22 patents, but I'd like to just turn through the  
03:52:14 23 titles of the patents to see -- just to turn  
03:52:16 24 through them. If you look at the first patent,  
03:52:20 25 and I do not believe that any of these patents

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03:52:22 2 are Philip Morris patents. But I'm not  
03:52:26 3 positive. The first patent is a nicotine  
03:52:34 4 dispenser, do you see that?

03:52:34 5 A. Yes.

03:52:34 6 Q. "The Polymeric Reservoir of  
03:52:34 7 Nicotine"?

03:52:34 8 A. Yes.

03:52:38 9 Q. Do you recall this patent being  
03:52:38 10 brought to your attention?

03:52:46 11 A. Let me take a good close look at  
03:52:50 12 this. I think this patent not only came to my  
52:52 13 attention, I think this product was put on the  
03:52:52 14 marketplace.

03:53:00 15 Q. And the next patent --

03:53:00 16 MR. MURPHY: By whom?

03:53:04 17 THE WITNESS: By tobacco -- Advanced  
18 Tobacco.

03:53:06 19 Q. Advanced Tobaccos.

03:53:10 20 A. It may have been Advanced Tobacco.  
03:53:12 21 It was a product that was put in the marketplace  
03:53:20 22 called Favor, and eventually this patent was I  
03:53:28 23 think sold to a Swedish tobacco company, I  
03:53:32 24 believe, but it was in the U.S. market and I  
53:34 25 don't know what other markets it may have been

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03:53:34 2 in.

03:53:38 3 Q. Was it considered a competitor?

03:53:40 4 MR. MURPHY: Objection to form. You  
03:53:40 5 can answer.

03:53:44 6 A. Was it considered a competitor? I  
03:53:50 7 didn't -- I didn't believe it would compete  
03:53:54 8 because it didn't have any -- it wasn't a  
03:53:56 9 cigarette. It wasn't something you burned that  
03:53:58 10 tasted good and it didn't -- it didn't compete  
03:54:00 11 with our products.

03:54:02 12 Q. You didn't think it would be  
54:04 13 successful?

03:54:06 14 MR. MURPHY: Objection to form. You  
03:54:06 15 can answer it.

03:54:10 16 A. I don't recall exactly the first time  
03:54:12 17 I saw it or tried it myself, whether I thought it  
03:54:16 18 was successful. I don't believe I thought this  
03:54:22 19 would be a success in the marketplace, but it was  
03:54:24 20 a different marketplace I think.

03:54:26 21 Q. By the way, Dr. Houghton, are you a  
03:54:26 22 smoker?

03:54:26 23 A. Yes, I smoke.

03:54:34 24 Q. And do you sometimes try competitors'  
4:34 25 products?

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03:54:34 2 A. Yes.

03:54:40 3 Q. The second patent here is a patent  
03:54:44 4 called inhalation device, do you see that?

03:54:48 5 A. Yes. Is that -- no, mine says  
03:54:50 6 "Nicotine Dispensing Device."

03:54:54 7 Q. I'm sorry, I went -- entirely my  
03:54:58 8 mistake. The second patent is something that  
03:55:00 9 says "Nicotine Dispensing Device and Method for  
03:55:02 10 the Manufacture Thereof."

03:55:04 11 A. These are the same people I believe.

03:55:10 12 Q. Yes, you think that is essentially an  
03:55:14 13 improved version of the first patent?

03:55:16 14 A. I would guess at that. I don't know  
03:55:20 15 what the dates are on <sup>them</sup> '89. *dx*

03:55:22 16 Q. It's a couple of months later.

03:55:24 17 A. But the date of patent is not as  
03:55:26 18 important as the date filed to understand which  
03:55:28 19 one came first. Actually, the one that was  
03:55:36 20 issued second was filed first.

03:55:40 21 Q. That's correct. That's correct.

03:55:42 22 A. Sometimes you can't tell from the  
03:55:44 23 date of issue what's first or second.

03:55:46 24 Q. The next patent is "Herbal Chew and  
03:55:48 25 Snuff Compositions."

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03:55:52 2 MR. MURPHY: That's what it says,  
03:55:52 3 John.

03:56:02 4 A. That's what it is.

03:56:02 5 MR. MURPHY: What's the question.

03:56:04 6 Q. Do you remember this patent?

03:56:04 7 A. No, I don't.

03:56:14 8 Q. The next patent is an aerosol  
03:56:14 9 device.

03:56:16 10 MR. MURPHY: Again, what's the  
03:56:16 11 question, John?

03:56:28 12 Q. Do you remember this patent?

56:34 13 A. No, I don't recall this patent.

03:56:52 14 Q. Dr. Houghton, do you remember there  
03:56:58 15 being some concern at Philip Morris about the  
03:57:06 16 competitive threat presented by companies that  
03:57:12 17 sold forms of nicotine other than cigarettes?

03:57:16 18 MR. MURPHY: Objection to form; vague  
03:57:18 19 and ambiguous. I don't understand the question.  
03:57:20 20 If you do, you can answer the question.

03:57:24 21 A. What -- can you reword the question.

03:57:26 22 Q. Sure. Do you recall whether there  
03:57:30 23 was concern at Philip Morris about the  
03:57:34 24 competitive threat presented by companies that  
57:40 25 sold nicotine other than nicotine contained in

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03:57:40 2 cigarettes?

03:57:42 3 MR. MURPHY: Objection to form. You  
03:57:42 4 can answer.

03:57:48 5 A. I recall some people being concerned  
03:58:00 6 that perhaps smokers were -- would be -- be  
03:58:02 7 offered a product that they would rather use than  
03:58:08 8 cigarettes. But you go back here into, I don't  
03:58:12 9 know -- what is this time frame? -- 1990 or so,  
03:58:20 10 1991 there was probably 350 billion cigarettes  
03:58:24 11 being manufactured and sold in the U.S. by our  
03:58:30 12 competitors. All I was -- my interest is -- is  
03:58:34 13 in getting those competitors -- those consumers  
03:58:38 14 to switch to our products. There -- I had  
03:58:42 15 concern about the potential success in this  
03:58:48 16 general time frame on the RJR Premier product  
03:58:54 17 because I thought that it had the potential to --  
03:59:02 18 to be successful in the marketplace. It turned  
03:59:08 19 out it wasn't but we reacted to their announcing  
03:59:14 20 the development of that product with our first  
03:59:18 21 Delta and then Sigma and I guess relative to the  
03:59:24 22 whole concept that there may be other ways to  
03:59:28 23 provide consumers a cigarette in the future  
03:59:34 24 that's driving the development activities that we  
9:34 25 call Beta today.

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03:59:40 2 So was there some concern about a  
03:59:42 3 nonconventional cigarette? The answer is  
03:59:46 4 absolutely yes. Patents by our competitors  
03:59:56 5 relative to was there concern about other  
03:59:58 6 nicotine delivery systems in the sense of  
04:00:02 7 products that -- that contained nicotine as a  
04:00:12 8 replacement for cigarettes, I -- I believe there  
04:00:16 9 were people concerned about that, I've heard it.  
04:00:20 10 I would -- I would guess it would be interesting  
04:00:24 11 to see whether or not they were smokers or not  
04:00:28 12 smokers today. I -- I can't tell somebody else  
00:28 13 what to think.

04:00:32 14 Q. Dr. Houghton, do you recall being  
04:00:38 15 present at a meeting of the operations group?

04:00:42 16 A. Meeting of the operations --

04:00:46 17 Q. In the last couple of years at which  
04:00:52 18 Dr. Carchman made a presentation on these  
04:00:58 19 nontobacco competitors?

04:01:00 20 MR. MURPHY: Objection to form; lack  
04:01:02 21 of foundation. You can answer.

04:01:04 22 A. I have -- I have seen information  
04:01:12 23 on -- on nicotine patch business if that's what  
04:01:20 24 you're referring to. I don't know if it was for  
01:22 25 sure Richard who made the presentation, but I

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04:01:28 2 have seen presentations on -- on the nicotine  
04:01:30 3 patch business in that kind of area, yes.

04:01:34 4 Q. A presentation made to senior  
04:01:38 5 management of Philip Morris?

04:01:40 6 MR. MURPHY: Objection to form. What  
04:01:42 7 do you mean by senior management?

04:01:52 8 Q. To the vice president for marketing,  
04:02:00 9 vice president for operations, among others.

04:02:02 10 MR. MURPHY: You can answer.

04:02:06 11 A. I recall being -- being present,  
04:02:12 12 seeing information. I can't tell you who else  
02:18 13 was able to -- was there at the same time, but I  
04:02:20 14 recall seeing presentations on nicotine patches  
04:02:22 15 and those kinds of products.

04:02:24 16 Q. Do you recall the meeting being a  
04:02:30 17 meeting outside of R&D?

04:02:32 18 MR. MURPHY: Objection to form. You  
04:02:32 19 can answer.

04:02:36 20 A. What do you mean by outside of R&D?

04:02:42 21 Q. That's a fair question. The  
04:02:50 22 presentation that I'm referring to is a  
04:02:54 23 presentation that was not made to an R&D audience  
04:02:56 24 only.

03:00 25 A. Are you asking --

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04:03:00 2 MR. MURPHY: What's the question?

04:03:02 3 Q. Do you recall such a presentation?

04:03:04 4 A. If you're asking me did -- did we  
04:03:12 5 have R&D sponsored meetings where we would invite  
04:03:18 6 other organizations within Philip Morris and  
04:03:22 7 discuss issues in -- in a location that wasn't  
04:03:26 8 inside of our buildings, the answer is yes.

04:03:28 9 Q. And do you recall presentations made  
04:03:32 10 to the operations group where someone from R&D  
04:03:36 11 would make a presentation on these nontobacco  
04:03:36 12 competitors?

3:40 13 MR. MURPHY: I object to the form of  
04:03:40 14 the question.

04:03:44 15 A. I -- I told you I -- I recall being  
04:03:48 16 at presentations where patch business kind of  
04:03:54 17 things were covered. I don't recall where it  
04:03:56 18 might have been and I don't know if it was an  
04:04:02 19 operations meeting or -- or just a meeting that  
04:04:04 20 covered that issue per se or if it was requested  
04:04:10 21 by somebody to make a presentation on. I just  
04:04:12 22 don't recall. But I have been at meetings where  
04:04:32 23 that kind of information was presented.

04:04:34 24 Oh, my God.

4:36 25 MS. ROBBINS: I think we should get

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04:04:38 2 the award for the largest exhibits.

04:04:40 3 Q. Like I say, you've won the award for  
04:04:44 4 the largest strategic plan. This is the 1992  
04:04:48 5 strategic plan and appendices. The strategic  
04:04:50 6 plan is, actually, compared to the overall  
04:05:06 7 document, quite modest. It's the appendices.

04:05:10 8 MR. PAYTON: Would you mark this as  
04:05:12 9 Exhibit 16.

10 (Houghton Exhibit 16 for  
11 identification, 1992 to 1996 Philip Morris U.S.A.  
12 R&D strategic plan, production numbers PB 218245  
13 through PB 218822 and <sup>2021529528</sup>~~20212529528~~ through \*  
14 2021530105.)

04:05:20 15 Q. Dr. Houghton, you've been handed a  
04:05:52 16 copy of the 1992 to 1996 Philip Morris U.S.A. R&D  
17 strategic plan. It has production numbers PB  
18 218245 through PB 218822 and <sup>2021529528</sup>~~20212529528~~ through \*  
19 2021530105.

04:06:16 20 Dr. Houghton, there is a section in  
04:06:18 21 the report, I believe the report, strategic plan  
04:06:22 22 is, actually, everything is relative, but it  
04:06:24 23 appears to be only a hundred pages long. If you  
04:07:06 24 go to Page 80. Are you there?

7:06 25 A. Yes.

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04:07:10 2 Q. I'd like you to look at the section  
04:07:14 3 that is headed "2. New products" and it goes for  
04:07:22 4 the rest of this page and I believe for the next  
04:07:36 5 page and about a third. And I can tell you that  
04:07:40 6 there is a similar section in the appendix. It  
04:07:44 7 is actually shorter than the part here. And when  
04:07:48 8 you're finished with that I'll show you the part  
04:07:48 9 in the appendix.

04:07:48 10 A. Okay.

04:07:50 11 Q. It's too much to do at once because  
04:07:52 12 of the volume.

07:54 13 MR. MURPHY: That's fine.

04:11:26 14 Dr. Houghton, read through, if you would, just to  
04:11:28 15 the end of that section which is on Page 83.

04:11:30 16 THE WITNESS: Page 83?

04:11:38 17 MR. MURPHY: Yes. It returns to some  
04:11:40 18 of the same points.

04:15:44 19 A. Okay.

04:15:46 20 Q. Dr. Houghton, do you remember this  
04:15:48 21 section of the 1992 R&D report?

04:15:54 22 A. Specifically, no. Some of the --  
04:15:56 23 some of the things that they talk about in here,  
04:15:56 24 yes.

6:00 25 Q. Do you recall the discussion of

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04:16:08 2 pharmaceutical companies being competitors?

04:16:12 3 A. I see where -- where they -- that  
04:16:18 4 concept is addressed in here. It says "We have a  
04:16:24 5 new set of competitors with names like Marion  
04:16:26 6 Merrell Dow." Yes.

04:16:26 7 Q. Do you recall that?

04:16:30 8 A. Yes, I recall hearing that kind of a  
04:16:32 9 comment.

04:16:34 10 MR. MURPHY: I thought you were going  
04:16:34 11 to refer him to Appendix J.

04:16:36 12 MR. PAYTON: I am. But if we're  
16:38 13 going to stop at 4:30, I'm going to run out of  
04:16:40 14 time. So I'll ask him a few questions about this  
04:16:42 15 and I'll pick it up next time.

04:16:44 16 MR. MURPHY: Well, I think, John,  
04:16:52 17 that I would prefer to be docked the five minutes  
04:16:56 18 that it would take for him to read Appendix J  
04:16:58 19 before he is questioned about this. It's your  
04:17:02 20 choice, but we could go to 4:35 or so and give  
04:17:04 21 the witness five minutes just to glance quickly  
04:17:08 22 through Appendix J which is quite brief and then  
04:17:10 23 you could pose the questions that you have.

04:17:12 24 MR. PAYTON: That's absolutely fine.

17:16 25 Q. If you go to the appendix,

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04:17:18 2 Dr. Houghton, which I believe is going to be  
04:17:20 3 about two-thirds of the way through the entire  
04:17:24 4 volume you have, and the production number is PB  
04:17:54 5 218597. Are you there? It's Appendix J, it's  
04:17:58 6 entitled "Smoking cessation," cessation is  
04:18:02 7 misspelled and it then says "Nicotine delivery  
04:18:04 8 devices."

04:18:06 9 A. I noticed it's misspelled.

04:18:08 10 Q. I believe the <sup>relevant</sup> portion of this -- *X*  
04:18:12 11 actually, the entire appendix is four pages. Why  
04:18:14 12 don't you just read the entire appendix.

18:16 13 A. Thank you.

04:18:18 14 MR. MURPHY: Thank you, John.

04:23:06 15 A. Okay.

04:23:08 16 Q. Dr. Houghton, do you recall seeing  
04:23:10 17 this appendix?

04:23:14 18 A. Some of the information in it is  
04:23:20 19 familiar that's referred to in there. I don't  
04:23:24 20 know if it's familiar because it's been  
04:23:26 21 communicated to me some other time or because of  
04:23:28 22 this appendix, but there are some things in there  
04:23:32 23 that -- that are familiar and jog my memory.

04:23:38 24 Q. Speaking in general about the R&D  
23:48 25 strategic reports, strategic plans, are you the

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final approver of the R&D strategic plans?

MR. MURPHY: Object to the form of the question. I don't know what you mean by final approver.

Q. Do you have to approve the strategic plans?

MR. MURPHY: Do you mean does he write them?

MR. PAYTON: No.

Q. Do you have to approve the strategic plans?

MR. MURPHY: Same objection to form. You can answer the question.

A. Well, if it's an R&D strategic plan and it's issued, then it must -- must represent at least approval from the vice president that this is the set of activities or direction that R&D should be going.

Would I have read every single word? I'm afraid not.

Q. Do you happen to know who would have been responsible for this section of the R&D strategic plan, the section on smoking cessation, nicotine delivery devise?

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:25:14 2 MR. MURPHY: Object to the form. You  
:25:14 3 can answer.

:25:22 4 A. I -- I don't know who wrote it.

1:25:24 5 Q. Now, Dr. Houghton, is there a  
4:25:28 6 committee that reviews various portions or all  
4:25:32 7 the portions of the strategic plan?

04:25:34 8 MR. MURPHY: As of when?

04:25:36 9 Q. Let's say as of the 1992 strategic  
04:25:38 10 plan.

04:25:42 11 A. If I recall correctly, the way we --  
04:25:44 12 we were running planning at the time is we had a  
25:48 13 planning committee that was made up of -- of  
04:25:56 14 people, scientists and engineers, et cetera, that  
04:26:02 15 represented each of the divisions, and on top of  
04:26:06 16 that there was a planning committee chairman and  
04:26:10 17 I think an assistant chairman who would be the  
04:26:14 18 chairman the next year. And basically what --  
04:26:20 19 what they would do is identify the information  
04:26:24 20 that needed to be generated in order to put the  
04:26:28 21 plan together. They would go out and get  
04:26:32 22 information from different sources to identify  
04:26:36 23 what the potential business world might look like  
04:26:40 24 five or ten years out.

26:44 25 Based upon that, they would come back

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and, getting all of their information, pulling it together, they would -- they would make some guesses as to what that environment could look like. These are generally referred to as scenarios. This is what that group of people believed was the most probable environment we might find the industry in.

I'm not sure that anybody five years ago would have predicted the same environment that the industry's in today. So how good this prediction was, I think you can go back today maybe and go through and say, and rate that. It's not useful I don't believe.

So then they would say well, if this is the most likely scenario, what are the kinds of things we might want to pursue in order to be able to be successful if that scenario should happen, and in some cases where it really gets -- where it's very difficult to make predictions you might have alternate scenarios generated, in which case, then there may be another set of alternative activities that you might want to undertake.

Then when it gets all down to the

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final thing, what you have to do is say, okay, from a business perspective point of view and from a resource point of view, what are the probable things that we should do, what are the high priority things, and man down against those, and those things that you don't have the resources for you're just not going to be able to do within that planning thing, within that planning cycle.

So what you're gonna see in a plan is a lot of estimation on potential future. You're gonna see a lot of possible answers on -- or possible actions that could take place.

You're going to see input from a lot of different organizations, and I think going through all of the appendices -- appendices, I'd have to take a look at them, but I would -- I would believe that there might be input from different organizations outside of R&D, and then all of that would be used to say, okay, what is the most likely environment we're going to find ourselves in, what are our priority activities. Out of this plan are we going to set a direction, commit resources against it? So then after this

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04:29:52 2 would come an operational plan normally which is  
04:29:56 3 here's what we're gonna do in the next year based  
04:30:00 4 upon all of the information in here and our best  
04:30:02 5 guess and our resources available.

04:30:08 6 Q. In 1992 --

04:30:08 7 A. Yes.

04:30:26 8 Q. -- did R&D consider nicotine delivery  
04:30:28 9 devices, as that term is used in Appendix J, to  
04:30:30 10 be competitors to cigarettes?

04:30:32 11 MR. MURPHY: Objection to the form of  
04:30:32 12 the question.

04:31:14 13 A. If I read through, and it's hard to  
04:31:16 14 recall exactly what was happening in the end of  
04:31:20 15 1991, what was the business environment, what  
04:31:24 16 it -- what I read from in here, what it tells me  
04:31:32 17 is that nicotine patches have been tested, there  
04:31:36 18 are publications in journals, okay, but they're  
04:31:40 19 not in the marketplace. What is in the  
04:31:44 20 marketplace? What they say is there's Nicorette,  
04:31:50 21 there are other programs, okay. But there are no  
04:31:54 22 nicotine patches. There's some indication  
04:32:02 23 that -- there's some development work going on  
04:32:08 24 somewhere on a nicotine aerosol I believe and  
04:32:14 25 I've got to -- I read it in here. Kabi

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04:32:18 2       Pharmacia, okay. Which had some patents which  
04:32:22 3       indicated that. Here you have the British  
04:32:26 4       medical journal Lancet suggesting, suggesting  
04:32:32 5       that, one, "This opinion might not be negative,  
04:32:36 6       although these nicotine replacement products are  
04:32:38 7       marketed as aids to stop smoking, with further  
04:32:42 8       refinement some may also have potential for  
04:32:44 9       long-term use. And if permitted, might  
04:32:48 10      eventually replace tobacco on the open market.  
04:32:54 11      It seems logical to offer either a cleaner  
04:32:58 12      product than a cigarette," in brackets, "or,  
33:02 13      better still, an acceptable source of more pure,  
04:33:08 14      less contaminated nicotine. The principle is the  
04:33:12 15      same as that of the U.K. low tar program" which I  
04:33:18 16      I recalled that Froggett I believe was pushing.  
04:33:22 17           Q.     That was the low tar/high nicotine?  
04:33:22 18           A.     Yes.  
04:33:24 19           MR. MURPHY: That's Lord Froggett.  
04:33:28 20           A.     Lord Froggett. "Although, albeit a  
04:33:32 21      gigantic step, too big it seems for regulatory  
04:33:32 22      authorities and health professions in the  
04:33:38 23      U.S.A.," in the U.S.A. Is it possible that --  
04:33:40 24      that in reading that kind of thing somebody could  
33:50 25      consider that there are 350 billion cigarettes

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out there being made by our competitors and that we might not get those consumers smoking those cigarettes, that they might in fact do what Lancet suggests in here? I think at the time it was possible for people to say, hey, this is a possible scenario. That's what it looks like. This is the end of 1991, I don't know who wrote it, but the end of 1991 is what it appears to be. So to have somebody at that time look at -- at patches and what Lancet says as an indication that there could be other businesses out there attempting to lure your competitors' smokers away from your competitor just as you want that competitors' smoker to come to your product, in that sense, yeah, I -- I could -- could understand them looking at that as -- as a competitor, not in the sense of competitor of R.J. Reynolds.

Now, R.J. Reynolds we understood at that time, we understood that they had been ahead of us in Premier. We understood I believe from this that they haven't really given up. We understood that our competitors were gonna try and at least pursue research and patenting of

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04:35:38 2 nonburning tobacco products. We felt that was  
04:35:42 3 also a threat to our business and we pursued  
04:35:46 4 those kinds of things, and I -- it also refers to  
04:35:48 5 the ART program in there which we were pursuing  
04:35:54 6 and continue to pursue. The fact that Premier  
04:35:58 7 was not successful in the marketplace, the fact  
04:36:02 8 that ART or de-nic was not successful in the  
04:36:04 9 marketplace is not going to stop us from pursuing  
04:36:08 10 products that our consumers are going to find to  
04:36:12 11 be attractive or -- or of interest to them, that  
04:36:16 12 has benefits, that they would prefer to use that  
36:18 13 kind of a cigarette in the future, we're going to  
04:36:20 14 continue to strive to make those kinds of  
04:36:24 15 products and get an advantage in the marketplace.  
04:36:26 16 I'm not interested in making nicotine  
04:36:26 17 patches.  
04:36:34 18 MR. MURPHY: It's now 4:36. Can we  
04:36:36 19 call it a day?  
04:36:38 20 MR. PAYTON: Yes, we can. Thanks a  
04:36:38 21 lot, Dr. Houghton.  
04:36:38 22 THE WITNESS: Thank you.  
04:36:40 23 THE VIDEO OPERATOR: We're going off  
04:36:44 24 the record. The time on the screen is 4:36:42.  
37:46 25 (Time noted: 4:36 p.m.)

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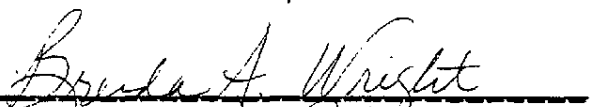
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KENNETH S. HOUGHTON

Subscribed and sworn to before me  
this 29<sup>th</sup> day of April, 1998.



Notary Public  
State of Virginia  
County of Chesterfield

My Commission Expires January 31, 2000

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C E R T I F I C A T E

STATE OF NEW YORK )

: ss.

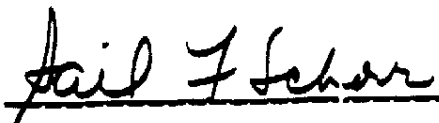
COUNTY OF NEW YORK )

I, GAIL F. SCHORR, a Certified  
Shorthand Reporter and Notary Public within and  
for the State of New York, do hereby certify:

That KENNETH S. HOUGHTON, the witness  
whose deposition is hereinbefore set forth, was  
duly sworn by me and that such deposition is a  
true record of the testimony given by the  
witness.

I further certify that I am not  
related to any of the parties to this action by  
blood or marriage, and that I am in no way  
interested in the outcome of this matter.

IN WITNESS WHEREOF, I have hereunto  
set my hand this 27<sup>th</sup> day of July, 1995.

  
GAIL F. SCHORR, C.S.R.

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**E X H I B I T S**

**DESCRIPTION**

**PAGE LINE**

(Houghton Exhibit 12 for  
identification, document entitled "  
Study of why people smoke," production  
numbers PA 730433 through PA 730436 or  
2020153288 through 2020153291.)..... 68 18

(Houghton Exhibit 13 for  
identification, report entitled "  
Manipulation of nicotine delivery by  
addition of acids to filler," dated  
June 18, 1975, written by Joseph  
Cipriano, production numbers PA 918727  
through 8738 or 2024545721 through  
2024545732.)..... 107 21

(Houghton Exhibit 14 for  
identification, document entitled "  
1989 to 1993 PM U.S.A. R&D strategic  
plans," dated February 1, 1989,  
production numbers PB 135003 through PB  
135206 or 202133743 through  
2021337617.)..... 124 18

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1       Houghton - Highly Confidential - Trade Secret  
2       (Houghton Exhibit 15 for  
3       identification, 1991 through 1995  
4       Philip Morris U.S.A. R&D strategic plan,  
5       production numbers PB 135207 through  
6       PB 135819 and 2021342774 through  
7       2021343387.) ..... 151   12

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9       (Houghton Exhibit 16 for  
10       identification, 1992 to 1996 Philip  
11       Morris U.S.A. R&D strategic plan,  
12       production numbers PB 218245 through PB  
13       218822 and 20212529528 through  
14       2021530105.) ..... 161    9

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